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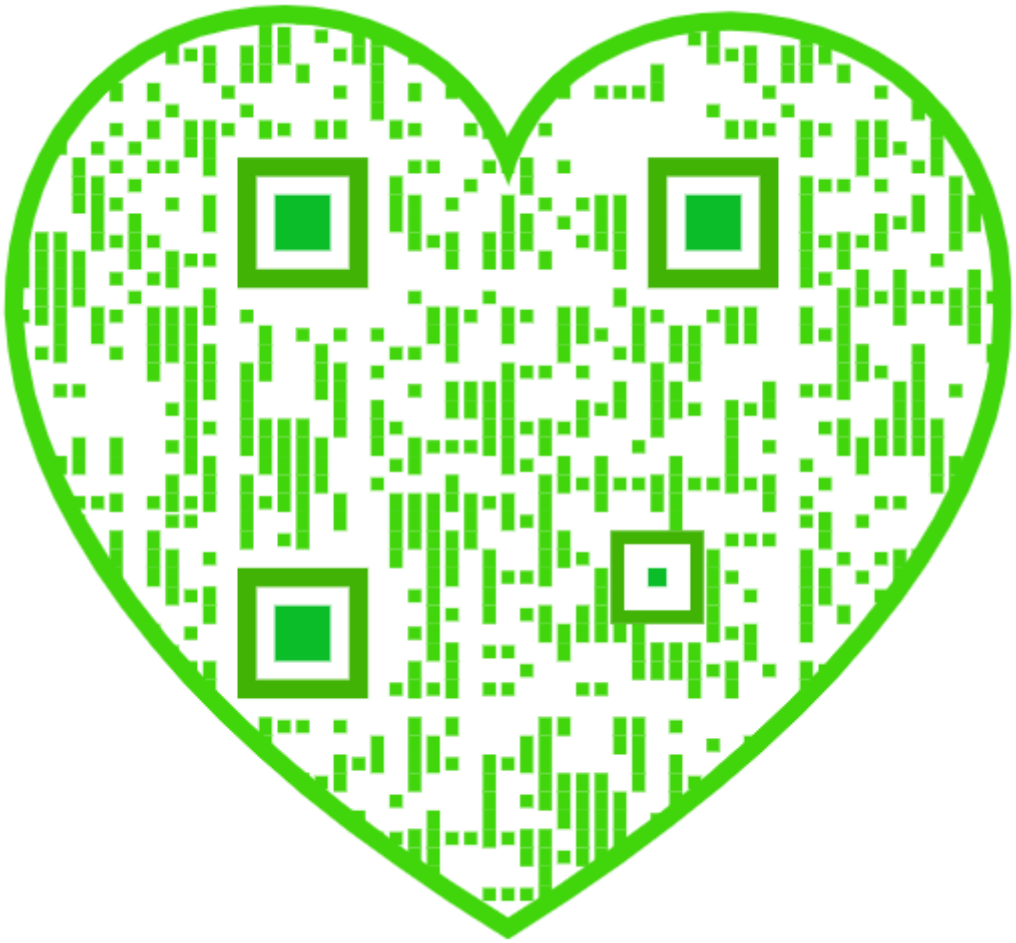

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INDIAN NOTES AND MONOGRAPHS

A SERIES OF PUBLICATIONS RELATING TO THE AMERICAN ABORIGINES

TYPES OF CANOES ON PUGET SOUND

BY

T. T. WATERMAN

AND

GERALDINE COFFIN

NEW YORK

MUSEUM OF THE AMERICAN INDIAN

HEYE FOUNDATION

1920

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TYPES OF CANOES ON PUGET SOUND

BY

T. T. WATERMAN

AND

GERALDINE COFFIN

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TYPES OF CANOES ON PUGET SOUND

By

T. T. Waterman and Geraldine Coffin

INTRODUCTION

THE canoes and the canoe manufacture of the North Pacific area have already received a fair amount of attention in ethnographical literature.[1] Many sizes and shapes of craft are in use, most of which have not been described in detail. All North Pacific canoes from Mount St Elias in Alaska to Eel river in northern California are, to quote the *Handbook*,[2] of a dugout type. The area of Puget sound lies in a general way toward the center of this region, and in this vicinity the largest variety of canoes seems

to be in use. Our present purpose is to describe the types of canoes found at the present time on Puget sound proper, and then to outline, so far as is possible on the basis of scanty information, the distribution of these types into other regions.

The specimens on which this discussion is based were collected for the Museum of the American Indian, Heye Foundation, in the immediate vicinity of Seattle. The native terms for the various models and for the parts of the canoes are in the "Duwamish" dialect of Salish. The sounds occurring in this and the other Salish dialects spoken on the upper part of Puget sound are represented in the following tabulation.

VOWELS

i,	ɪ					u,	ʊ
	e,	ɛ			o,	ɔ	
			Δ				
	a				a		

i, as in *machine*
ɪ, as in *pin*
e, as in *fête*
ɛ, as in *met*
a, as in *hat*
u, as in *rule*
ʊ, as in *full*
o, as in *note*
ɔ, as in *ou* in *ought*
a, as in *bar*
Δ, as in *but*

DIPHTHONGS

ai, as in *aisle* oi, as in *boil*

SEMIVOWELS

w, y, substantially as in English

CONSONANTS

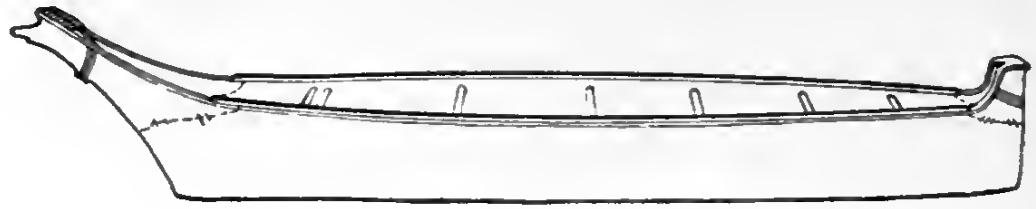
	Stop			*Labialized stop*		*Continuant*	*Affricative*		*Lateral*		*Affricative lateral*	
	Surd	Sonant	Fortis	Surd	Fortis	Surd	Surd	Fortis	Surd	Sonant	Surd	Fortis
Labial	p	b	p'									
Dental	t	d	t'			s	ts	ts'	ʟ	l	tʟ	tʟ'
Alveolar						c	tc	tc'				
Palatal	k	g	g'	kw	kw'							
Velar	q	γ	q'	qw	qw'							
Glottal	ʾ					h, ʿ						

Of these sounds the following need, for the casual reader, some explanation. Surd *l* (written ʟ) is an *l* produced without the help of the vocal cords. The symbol *c* has approximately the value of *sh* in *she*. The digraph *tc* is sounded like *ch* in *church*. The symbols in those columns which are headed "fortis" represent exploded or cracked consonants, produced with hard pressure of the tongue, followed by an

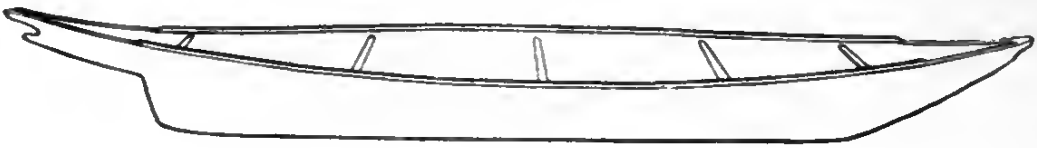
abrupt release. The sound is quite sharp, markedly different from anything in English. The "velar" sounds likewise seem quite strange to English-speaking people; they are produced by making contact between the tongue and the back part of the palate (the velum). The glottal stop (') represents a catch which checks the breath in the throat (larynx). Two sounds resembling English *h* seem to exist, one of them very weak, represented here by ^{c}. Superior letters represent whispered or weakly articulated sounds.

SPECIALIZATION OF THE NORTH PACIFIC CANOE INTO DIFFERENT MODELS

In the year 1806 Lewis and Clark noted that the Indians on Columbia river possessed a number of different types or models of canoes.[3] Among more recent authors, Boas,[4] Gibbs,[5] Swan,[6] Niblack,[7] and Curtis,[8] have made observations to a similar effect. It may be relied on, therefore, that in the whole area which lies between Columbia river and southern Alaska, the canoe has

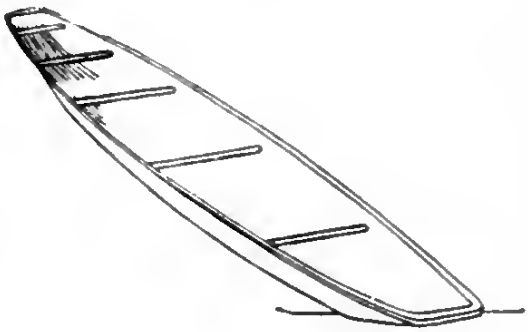


a



b

c



d

e

f

DIAGRAM REPRESENTING THE SIX TYPES OF CANOES ON PUGET SOUND

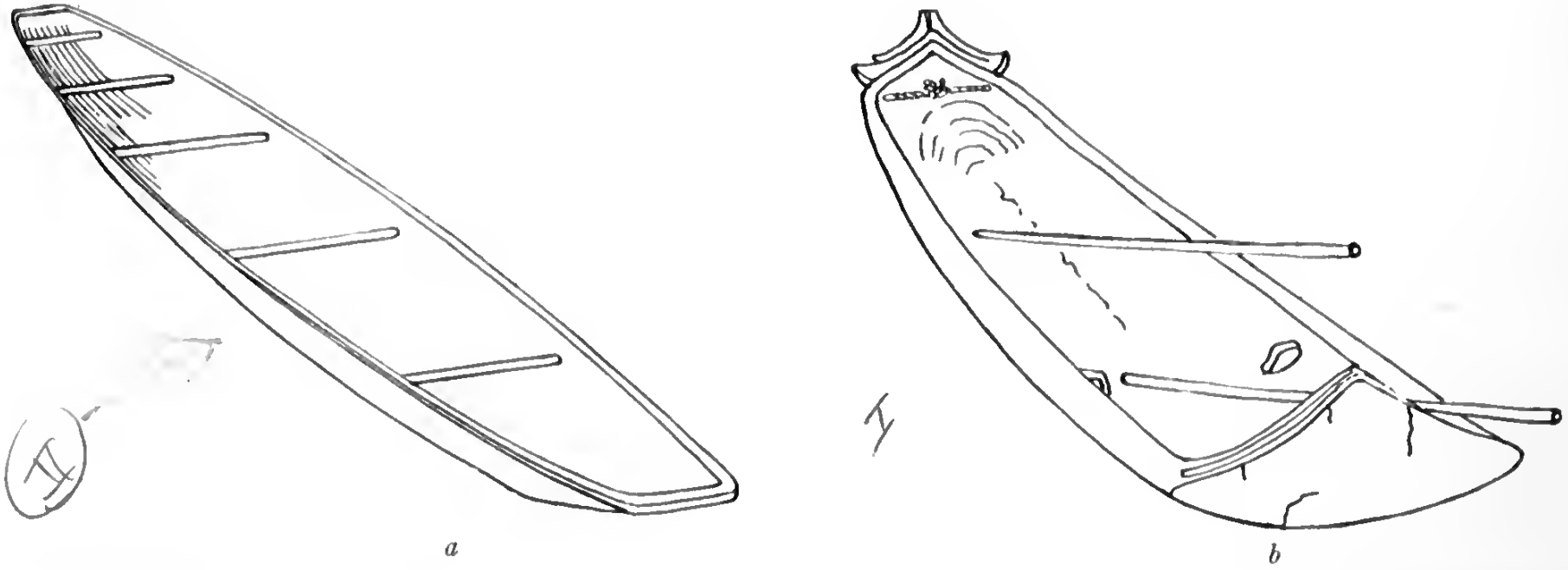
(*a*, the "war canoe"; *b*, the "freight canoe;" *c*, the "trolling canoe"; *d*, the "shovel-nose canoe"; *e*, the "one-man canoe"; *f*, the "children's canoe," used by children and as a knockabout.)

been evolved into a number of highly specialized forms. Various writers, however, classify canoes in somewhat different ways. Gibbs, and Lewis and Clark seem to imagine that the various forms are characteristic of different tribes. With Curtis and Niblack the *essential* thing in classification seems to be a matter of size. Boas alone has given the proper weight to differences in form.[9] On Puget sound at the present time there are six types of canoes in use, which are distinguished by the Indians not on account of their size but by differences in the shape of the hull. The variation in shape is very wide. On these waters one type of canoe is built for going to sea, and the lines of the hull are designed with the idea of enabling the craft to ride waves without shipping water. Every inch of the model is carefully calculated to keep it "dry." No better craft for rough water, by the way, has ever been devised. The canoe rides the combers better than the white man's boat. This was noted by Lewis and Clark[10] more than a hundred years ago, and similar comments are made

today, even by men who follow the sea. A second type of canoe is designed for use on rivers and lakes. The bow and stern of this second model are cut off square, making the craft very convenient for poling. In spearing salmon in the streams, also, a spearsman can ride on the extreme tip of the bow and strike fish almost under his feet, while a companion paddles. This canoe is of little use in open waters. The salt-water villagers take the fish by means of nets and traps only. Each of the types in this way has its own particular uses. The series as a whole is an example of high specialization in a seafaring mode of existence.

Characteristic specimens of each of the six types used on Puget sound are illustrated in the accompanying diagram (pl. 1). In order to bring out differences in outline, the drawings have been reduced to one length.

In actual practice each model of canoe is made in a large range of sizes, a matter which can hardly be presented in a diagram. Specimens of model *a* (pl. 1) exist which are, for example, only 16 ft. long, while one other specimen of the same model exists which



a *b*

DIAGRAM SHOWING (*a*) THE SHOVEL-NOSE CANOE USED ON PUGET SOUND, AND (*b*) THE CANOE USED BY THE YUROK OF NORTHERN CALIFORNIA

has a length of 80 ft. Model *b* in the diagram is usually made of fairly good size, in the neighborhood of 22 ft. long; but there is great variation in specimens. Model *c* is always small, and model *f* is never very large. We have not examined a large enough number of canoes to make it worth while to publish the measurements taken. The specimens from which the drawings

FIG. 1.—Diagram showing the outline of the "Alaska" canoe, used by the Kwakiutl, Tsimshian, and Haida. It is occasionally seen on Puget sound. (After a diagram in Boas, 1909.)

were made were collected in the immediate neighborhood of Seattle and are in the Museum of the American Indian, Heye Foundation.

An additional type, the great "Alaska" canoe, called by the Salish *tsaba'xad*, is sometimes seen on the sound. Such canoes came down from the north, manned usually by Haida from the Queen Charlotte islands,

or by Nootka from the west coast of Vancouver island; occasionally by people of other tribes. These canoes were not used by the Puget Sound people, and were looked on with some curiosity. Their outline is shown in fig. 1 (after Boas).

POINTS OF INTEREST IN THE VARIOUS TYPES

A.—The "War Canoe" (*ao'txs*)

The Songish about Victoria, B. C., have this model, which they call *a'tqɛs*.[11] Its most characteristic features, both there and here, are a prominent and lofty bow and stern. These consist, on Puget sound, of separate sections hewn out of cedar and fitted carefully into their places on the hull. They are fastened there by pegs of cedar (*st'Δ'stΔd*, the word now applied to nails) and lashings of twisted cedar withes (*sti'dΔgwΔt*), and the joint is watertight without being "pitched" (see Swan, 1868, for the method of fitting). Artistically, the shape of the prow strongly suggests an animal's head, and gives the canoe (which is exquisite in design) an air of alertness, as though it were moving of its

TWO SUQUAMISH "WAR CANOES" LASHED TOGETHER AND CARRYING A PLATFORM OF POLES

This device was used in transporting house-planks and for moving large quantities of effects from one site to another. (Photographed at Suquamish, Washington, 1913.)

own accord. From the practical standpoint these elevated additions to the hull are designed to throw aside the seas. The naked hull without these bow and stern pieces would soon fill in rough water. The pieces seem so slender and inadequate that an observer would doubt their effectiveness for such a practical end. The answer is that in the course of generations they have been reduced to the most slender proportions which will give the necessary protection, and they are wonderfully effective in aiding the actual navigation of the canoe. Many Indians and whites who have followed the sea tell us that this type of canoe ships less water in a storm than any craft in the world. If we are looking for a catchword, we may call this the "ocean-going canoe."

A number of other terms have been applied to this class of vessel. A popular term in the Northwest is the word "Chinook." We find, for example, the "Chinook" wind, the "Chinook" jargon, and "Chinook" salmon. "Chinook" is also applied by Indians and whites to the type of hull just described, and appears in that sense

in the works of Swan and Boas. The term, bearing in mind, of course, that it is used in a general sense and is not necessarily to be associated with the Chinook tribe proper, living at the mouth of the Columbia, is distinctive, and has the advantage of usage behind it. Locally, on Puget sound, the model goes commonly by this name. This same type of hull is found in use by all the tribes from Columbia river northward to the Quatsino, living at the northern end of Vancouver island.[12] North of this area, among the Kwakuitl and Tsimshian, Haida and Tlingit, the sea-going canoe is different, and is of the type illustrated in fig. 1. Niblack[13] and Boas[14] have noted the distinction between the sea-going canoes of the south and those of the north, and Niblack illustrates it with a somewhat misleading figure. Niblack calls this northern model the "north coast type," while Boas styles it the "Tsimshian" model. The terms "Tsimshian" and "Chinook" might well be used as catchwords to mark the distinction between the two varieties: one found along the coast of Alaska and British Columbia, the other

BOW OF THE HULL SHOWN IN PLATE V, VIEWED FROM THE SIDE. WITH THE MAKER'S WIFE, MARY ADAMS (TAI'PΛS) SEATED BESIDE IT

(Photograph by J. D. Leechman.)

occurring on the west coast of Vancouver island and southward as far, at least, as Columbia river.

B.—The "Freight Canoe" (*sti'waL*)

The freight canoe differs in several respects from the foregoing. It never reaches the great size which the first-mentioned type sometimes attains, though specimens exist which are as much as 40 ft. in length. The cutwater in this type is vertical, or nearly so. This is the point mentioned by the Indian informants as the characteristic thing. The Songish term for this craft, *sti'uwaitatl*, is translated by Boas as "having a square bow." I can find no reason for this peculiarity, nor advantage in it. An extra piece of cedar is carved and fitted with dowels on the prow of this craft also, "lifting" the lines of the hull somewhat. This piece differs greatly from the pieces fitted on the ocean-going canoe. The stern is modeled out of the original log. The tip of the prow is shaped into a "notch" resembling an open mouth. This type of canoe is used for journeys with household posses-

sions in quiet waters. In a storm it is not particularly safe.

C.—The "Trolling Canoe" (*sdΔ'xwɪL*)

This craft has a very narrow hull, and the bow has more lift than in the preceding model.[15] Specimens of this type are usually relatively small, designed to carry only two or three men. This was the vessel used for hunting, for harpooning porpoise and otter, and in trolling for fish. The model exhibits some elegance of design. We may perhaps follow Boas in calling this craft the fishing or trolling canoe. A very large canoe of this model was called *sdΔxwi'lūs*. For hunting the porpoise a very swift canoe was needed, for the animal was alert, and hard to harpoon. Boas gives a complete account of the pursuit, as carried on by the Kwakiutl. The term for porpoise-hunting on Puget sound is *ca'sab*. The canoe intended for this purpose was called *casa'bhwlL*. It was of the type being discussed, but a fine, "clear" model and had to be fast.

INTERIOR VIEW OF THE HULL OF A SUQUAMISH "HUNTING CANOE" IN PROCESS OF MANUFACTURE
Made by Jack Adams (Xa'bsus), near Suquamish, Washington, in March, 1920.
(Photograph by J. D. Leechman.)

D.—THE "SHOVEL-NOSE CANOE" (*tL'ai*)

This type of canoe is called the "shovel-nose" because it is cut off square at bow and stern and the hull scoops forward like a shovel. The Songish visited by Boas have the same term, *tl'lai*, but the model pictured by Boas has a configuration somewhat different in certain details from the Puget Sound specimens seen. On the sound, the boat is hewn from one piece, while the Songish are said to add on the flattened end in the form of a separate plank. In spite of its shape the "shovel-nose" is in appearance anything but clumsy. It is excellently designed for a special purpose. A man may stand at the tip-end of bow or stern, and push with a pole, in shallow water. The people also who live up the rivers depend on this type of canoe for the spearing of salmon. When the fish are running in the rivers, one man paddles in the stern while a companion stands at ease out on the extreme end of the prow, with his spear poised ready for fish. His position there is ideal for striking salmon, since he lunges

at fish almost directly under his feet. The bow-end of this boat is more slender than the stern. This type of boat is useful only in quiet waters. A characteristic piece of equipment is the canoe pole, *he'ΔqalsɪdL*. Such a canoe is fine for sandbanks and shoals where the heavy Chinook type, with its features designed for protection against waves, is largely useless. Far up the rivers no canoes other than the shovel-nose are seen. The "salt-water" people, or "*xwaldja'bc*," relate with amusement that "forest-dwellers," or *ʟa'labɪ^{w}*, that is, the people living up the rivers, have only one word for canoe. "If it is a *sdΔ'xwɪL*, or if it is a *sti'waL*, or even if it is a big *ao'txs*, they call it a 'shovel-nose,' just the same."

Some of these "fresh-water" Indians some years ago came voyaging down to Port Washington inlet, near the navy yard at Bremerton, in a shovel-nose canoe. In trying to negotiate the channel during a breeze and a change of tide, their canoe, which was not designed for such operations, filled and sank under their feet, and they lost their lives.

THE FINISHED HULL OF THE CANOE SHOWN IN PLATES IV AND V

To the left in the photograph is the bow, which in this case lacks the "notch" found in many specimens. The "lift" of the boat's lines toward the prow may be plainly seen. This enables it to ride the waves (Photograph by J. D. Leechman.)

E.—THE "ONE-MAN CANOE" (*di'twiL*)

This is a very diminutive vessel, the smallest of all the Northwestern canoes. The term is grammatically the diminutive of *sdΔ'wiL* (*c* in the diagram, pl. 1). Nevertheless, as a glance at the drawing will show, its hull differs somewhat in shape from that of its larger namesake. The *di'twiL* will carry only one person; but it is often very beautifully made. Specimens capsize very easily, but so long as they remain right-side up, they may be driven at high speed, and are light enough to be easily lifted and carried from place to place. They were used for fishing, and, following the introduction of firearms, for hunting ducks. Firing a shotgun over the side, however, turns the craft over. Bow and stern are finished off with very small carved pieces, which are set in place with the usual cedar pegs, and the bow carries the "notch" characteristic of the larger type. The canoe is rigged with thwarts, but the huntsman sits, not on these, but flat on the bottom of the boat. We may perhaps speak of this type as "the one-man canoe."

F.—The "Children's Canoe" (*qe'lbɯd*)

The canoe pointed out under this name is a "double-ended" type. The Indians describe it as a craft *with two sterns*. Its ends, which are identical in shape, are finished off to resemble the stern of the big war-canoe shown in pl. I, *a*. This craft, while not of great length, is very heavy, since the sides are relatively thick, and it is also very wide in the beam. It was used for the commonest purposes. Children got their first knowledge of the handling of canoes by "practising" with it. While the sides are not adzed down to the thinness which characterizes the hunter's craft, the vessel is nevertheless well designed in its own way and is much lighter and more manageable than a white-man's boat. It is worth noting that the word *qe'lbɯd*, given as the term for this type of boat, is the general word for canoe. The term *dlq'e'dwlʟ* was also applied to this type. We may perhaps speak of this form of craft as the "children's canoe."

A "SHOVEL-NOSE" CANOE IN ACTION

Scene on the upper waters of Quinault river, coast of Washington. (Photograph by J. H Weir, of "The Mountaineers.")

NATIVE TERMS FOR THE PARTS OF THE CANOE

1. Bow, *cɛdst.*
2. Stern, *i'laaq.*
3. Side, *sila'lgwil.*

   A steam vessel is called *u'dalgwil*, "burning sides."
4. Gunwale, *sbΔtctca'lgwil.*
5. Additional piece or section, hewn out separately, set on the bow, and fastened in place with pegs and lashing of twisted cedar, *stL'a'lu.*

   It is fastened in place with dowels or pegs of cedar (No. 6), and lashings of twisted cedar-twigs (No. 7).
6. Dowels or pegs used as above, *st'Δ'stΔd.*

   This word is now used for iron nails.
7. Cedar withes, *sti'dagwΔt.*

   Used in fastening on the bow and stern sections, and in closing up cracks.
8. Stern-piece, *stL'a'lalΔp.*

   Seated in place like the bow-piece, mentioned above.

On the Exterior of the Hull

9. Narrow piece projecting forward at the tip of the prow, *bΔ'qsɪd.*

The shape of the forward part of the bow-piece strongly suggests the head of some living creature. The projection would correspond to a snout or beak. The Indians say the resemblance is accidental.

10. A knob or projection on the neck of the canoe, about two feet below the preceding feature, *bla'lgwa'*.

This word means "navel." The Makah call this projection the boat's uvula.

11. Ornamentation consisting of parallel lines, incised with a special tool, like a reamer, on the side of the neck, *astcɪ't'absub*.

This is incised with a special tool, in the old days made of flint, resembling a reamer. This ornamentation is found also on the top surface of the bow-piece.

12. Curved line of the prow, *cli'bus*.

13. Cutwater, *tʟ'kwa'psΔb*.

14. A bulge or raised strip at the gunwale, *stʟaa'gwΔp*.

A corresponding excavation on the inside of the hull is mentioned below (No. 23).

15. Bottom, *s'a'tsΔp*.

16. Where the bottom turns up toward the gunwale to form the sides, *cΔxdts'a'ladi*.

17. Sharp blade or half-keel, under the canoe's forefoot, *st'ɪtci'bɪt*.

This acts as a "muffler." It cuts into the waves as the canoe forges ahead, without splashing. The canoe moves silently.

18. Forward extremity of the half-keel, *s'ilqs*.

On the Interior of the Hull

19. Interior of the canoe, *xuxta'ɨs*.

20. Where the bottom turns up to form the sides, *wila'ladiL*.

21. Offset where the canoe widens at the gunwale, *stpu'tsid*.

This corresponds to the *sɨLaa'gwΔp* (No. 14 above).

22. Side of the canoe, *i'lalgwɪL*.

23. Trench leading sternward from the tip of the prow, *sxwɔ'qbus*.

24. Vertical line of the hull at the stern, *stLkwa'·lap*.

Additional Fittings

25. Thwarts, *cxalwi'ld*.

These are round poles instead of flat benches, as in the canoes of Alaska and in our own boats. When on a trip the Indians pad them with an old mat, folded.

26. Withes of twisted cedar limbs, which fasten the thwarts, *cli'dclidgΔs*.

They are rove through a perforation in the thwart, and then through perforations in the side of the boat. Similar withes are used for mending cracks and in fastening the bow and stern sections in place (see No. 7 above). The present word refers to the way in which they are manipulated in fastening thwarts in place.

27. Strip of wood along the gunwale, *stL'a'lalgwɪL*.

This is pegged to the top surface of the gunwale, to where the paddles rub, to prevent the sides of the canoe from being worn.

28. Painter, or boat rope, *LΔdgwi'lad*.

Used for mooring the boat, or anchoring it.

29. Crack in the hull, *actcΔ'x*.

30. Knot-hole, *stc'a'ctalus* (knot, *stcact*).

31. "Patched place," *stΔka'lgwɪL*.

When the side of a canoe is broken, a section is cut out bodily, a piece of plank being carefully shaped to fit in the space. This plank is fastened in place with cedar pegs and by "sewing" with cedar withes.

32. A "long patch," *sΔpp'a'tsgwɪL*.

This term refers to a place where a longitudinal crack in the bottom of the

hull has been closed by stitching it up with cedar withes.

33. Holes bored in making the canoe, to test the thickness of the sides, *udtc'ɪ'stΔd*.

These holes are later closed by plugging them with round pegs of maple, which swells greatly on being wet.

34. Mast, *xputdale* (cf. *pu'tɬd*, sail).

Informants insist that masts and sails are aboriginal. Vancouver, writing in 1792, says they are not.

35. Step or socket for the mast, *tcugwacα'gwΔp*.

36. Sail, *pu'tɬd*.

This was a "square" sail, of checker-work matting, and was hoisted only when the breeze happened to come directly over the stern.

37. Upper yard, *taʟa'ʟqud*.

38. Lower yard, *tʟi'dΔp*.

39. Paddle, *xobt*.

Terms of Direction

40. Ahead, *tudzi'q*^{w}.

41. Astern, *tuxula'q*^{w}.

42. Starboard, or right side, *dzaha'lgwisapΔp*.

43. Port, or left side, *kala'lgwisapΔp*.

44. Forward, *tuca'dst* (cf. *cɛdst*, bow).

45. Aft, *tue'laq* (cf. *i'laaq*, stern).
46. Amidships, *o'dugwɪL*.

Linguistically there is evident similarly between certain of the words in this list, as shown by the following groups:

(5) Bow-piece, *stL'a'lu*.
(8) Stern-piece, *stL'a'lalΔp*.
(13) Cutwater, *tL'kwa'psΔb* (cf. especially No. 26 below).
(14) Raised strip along gunwale, *stLaa'gwΔp*.
(24) Vertical line at stern, *stLkwa'·lap*.
(27) Strip pegged to gunwale, *stL'a'lalgwɪL*
(6) Dowels, or pegs, *st'Δ'stΔd*.
(33) Holes bored to test the thickness of the hull, *udtc'ɪ'stΔd*.

One is inclined to suspect the presence of a common suffix in the following cases:

(12) Curved line of the prow, *cli'bus*.
(23) Trench leading backward from the prow, *sxwɔ'qbus*.

The presence of a suffix is obvious in the following cases:

(3) Side, *sila'lgwil*.

(4) Gunwale, *sbΔtctca'lgwil.*

(22) Side of the canoe (interior), *i'lalgwɪL.*

(31) Section of plank used as a patch, *stΔka'lgwɪL.*

(32) Closing of a crack by sewing, *sΔpp'a'tsgwɪL.*

(11) Ornamental lines, *astcɪ'l'absub.*

(13) Cutwater, *tL'kwa'psΔb.*

(15) Bottom, *s'a'tsΔp.*

Analysis of these expressions is not possible at the present time.

The terms in the above list apply especially to the sea-going canoe. Similar words are applied to the other types of canoes, except where the corresponding parts are missing.

The notch at the bow of the trolling canoe is simply called *qa'dxu*, "notch."

DISTRIBUTION OF THE VARIOUS TYPES

A situation with many points of interest exists in regard to the distribution of these forms of canoes. For example, on Puget sound we have the six types of dugout canoes, which have been described; in northern Cali-

fornia we have only one. The question at once suggests itself, How far southward along the Pacific coast does the use of six types of canoes extend? And, again, as we travel southward, do all six of the Puget Sound types disappear from use at once, being replaced by new types of craft, or are certain of these Puget Sound types more widely distributed than the others? The last question, I think, is the more easily answered. The single type which is used on Klamath river and on Humboldt bay in northern California is probably a modification of one of the types used on Puget sound—the "shovel-nose" model described above (pl. I, *d*). The appended diagram (pl. II) shows these two craft side by side. There seems to be in a general way a marked similarity in these canoes. They are both dugouts, of a "square-ended" type, and in each case the model has reached a high degree of refinement. There is a skilful "pinching-in" of the lines of the craft toward the ends, and also a very graceful "lift" of the bottom at bow and stern. It may be asserted from experience that both

craft are very light and easily handled. The California canoe has no gunwale-strips,[16] and, moreover, it has in the stern some foot-braces and a seat, hewn in one piece with the hull, which are absent in the Puget Sound boat. The California boat, on the other hand, has no thwarts. The most striking difference, however, is that the bow and the stern of the California craft are crowned up into a peak, and the bow is further graced with a removable carven ornament, shaped like an inverted V. These differences seem superficial and underneath them the present writers see almost identical lines in the two vessels.

So much for the general resemblance. The facts of distribution make the idea of relationship much more plausible. It is worthy of remark that in California south of Humboldt bay there are no dugout canoes at all. Northward, however, dugouts are in use among all tribes as far as Puget sound. Moreover, in the case of some, at least, of the intervening tribes the shovel-nose or square-ended type of dugout occurs. This is true of the tribes about Klamath lake, for in-

stance, as shown by a specimen of their canoes collected by Dr Barrett, now in the Museum of the University of California. Information on this point is unsatisfactory, for in this intervening area few observers have taken the pains to note in detail what kinds of canoes were used. This is true of much of Oregon, even on the coast. Vancouver says of the Indians of Port Orford that "their canoes, calculated to carry about eight people, were rudely wrought out of a single tree; their shape much resembled a butcher's tray, and seemed very unfit for a sea voyage or any distant expedition."[17] This seems almost certainly to indicate that he saw craft of a shovel-nose type. We can find few other statements on this matter in the literature. On Columbia river, as shown by the statements of Boas,[18] on the coast of Washington as illustrated by the photographs of Curtis,[19] on Puget sound and northward to an unknown distance, as observed by the present writers, shovel-nose canoes are in general use. The bare facts, as we have them, seem to be most readily explained on the assumption

that one type of dugout canoe, of wide distribution on the North Pacific, has spread also as far south as the Yurok and neighboring tribes in northern California. The increased complexity of the design as found among the Yurok and their neighbors, as shown especially in the ornamentation, is possibly explainable by the fact that these tribes exhibit a distinctly higher culture in many respects than do their neighbors to the south, the east, or the north. For some reason, in the region about the mouth of Klamath river a secondary center of high culture has developed. It is not unlikely that this has produced the peculiar traits of their canoe.

It is noticeable also that there seems to be a *gradual* modification of all types of canoes as we move southward toward California. On Puget sound, five canoes out of six show a lift in the gunwales toward bow and stern. On the coast south of the Straits of Juan de Fuca, as shown by the photographs of Curtis,[20] canoes other than the shovel-nose have an abrupt "raise" at the prow, but amidships and at the stern they

are "flush," the gunwales forming a straight horizontal line. Apparently this arrangement might be considered as an approach to the California type of canoe, where the gunwales are perfectly flat, without any lift at either end.

If our inference is correct, it is apparent that, as we travel southward from Columbia river, five of the North Pacific types become modified and finally cease to be used. It has not been possible to find any evidence in the literature that indicates the point where the distribution of any of these models ceases.

The use of dugout canoes extends, of course, up the rivers which flow toward the Northwest coast. Thus the Wishram at the falls of the Columbia use the "Chinook" model described in the present paper, and other dugout models besides. George Gibbs stated that the shovel-nose type is the only one used on the Columbia above The Dalles.[21] Curtis has one picture of a dugout canoe used by the Nez Percés.[22] It is of the shovel-nose type (though shockingly clumsy, heavy, and ill-made—merely a log

roughly shaped and somewhat hollowed out). Chamberlain states[23] that the Kootenay have a dugout type of craft, of what shape we do not know. It seems to be impossible to trace in detail the distribution of the shovel-nose in this direction on the basis of any material now in print. We may speak with certainty, therefore, only of the region immediately about Seattle, where the present authors have had a chance to make observations. In this vicinity the only type of canoe used on the upper courses of the streams is the shovel-nose.

Concerning the distribution, in a northerly direction, of these types of canoes, little can be said at the present time. As remarked above, the Kwakiutl use in place of the *ao'txs*, a great sea-going canoe of somewhat different and more complicated model, and much more elaborately ornamented.

The evolution of canoes probably took place among the people somewhat northward of Puget Sound peoples, whose general level of culture is higher. Going southward

from the Kwakiutl, say, canoes are steadily less and less specialized, until we come to the tribes of northern California with their one model. South of the California tribes just mentioned, these influences are not apparent at all. Concerning the canoes of the coast north of the Kwakiutl, we can get at the present time no information. It is not known whether several types are in use, or only one. The pictures of Curtis, which might tell the story, are not nearly so useful as they are in other cases, since he photographed very few canoes in this area; possibly because he found so much else to picture.

CONCLUSIONS

The situation as regards canoes in the area under discussion may be essentially like that respecting types of pottery in the Southwest, as presented by Nelson.[24] He has shown in a most interesting way that the archaic types of pottery are also the types with the widest distribution. As we pass from center to periphery of the cultural region which he discusses, we encounter types of pottery which are more

and more primitive. One striking difference between Nelson's problem and the present one is that a great mass of evidence has been assembled in the Southwest, while in regard to canoes on the Northwest coast the data are largely lacking. Another difference is that Nelson carried out extensive investigations in the field, while the present discussion is based largely on scattered references in the literature. Nelson's conclusions, to be brief, are based on knowledge and facts, while our own must be in the last degree inferential.

The idea seems plausible, however, that the original type of canoe on the Northwest coast was the shovel-nose. Several considerations point in this direction. The shovel-nose is the simplest model. This raises a logical presumption that it may well be the oldest. It is associated with rivers, being of use only in streams and other quiet water. This also suggests that it may represent an early type. It may be regarded as certain that the first man or the first group who experimented with navigation on the North Pacific coast, experi-

mented on the rivers, and not on the high seas. This would seem to imply that the river craft would be the first to reach perfection. The sea-going "Chinook" type, and models showing points of similarity to it, are in all human probability later in origin. When we consider the distribution of the various types of canoes, we emerge for a moment from the jungle of speculation into the field of evidence, though that evidence is scanty. It is a fact that the shovel-nose type of canoe is of wider distribution than the other types. It is the only type found in the marginal regions to the east and south of the area of typical North Pacific Coast culture. Thus is raised the presumption that it represents an older type of craft than do the other models.

The connection between northern California and the North Pacific area, which seems to be exemplified in the distribution of dugout canoes, is also a matter of some importance. Ultimately it will doubtless be proved by a careful comparison, in the two areas, of houses, geographical notions, money and financial institutions, and other

matters, that the mode of life of the tribes in extreme northern California is a direct offshoot of the type of culture found in the Northwest.

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3. 1904, vol. IV, pp. 31, 35.
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6. 1857, pp. 79, 80.
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8. 1907–1916, vol. IX, p. 60.
9. See especially 1890, p. 817, with figures.
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11. Boas, 1890, p. 566.
12. Boas, 1890, p. 566; see also Curtis, 1907–1916, vol. X, Folio, pl. 345.
13. 1890, p. 295.

14. 1889, p. 817.
15. The corresponding class of craft is called *snE'quatl* among the Songish, and is styled by Boas the "small fishing canoe."
16. See above, p. 26.
17. 1798, vol. I, p. 204.
18. Quoted by A. B. Lewis, 1906, p. 163, as noted above.
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